



## MORBIDITY AND MORTALITY WEEKLY REPORT

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Progress in Chronic Disease Prevention**Chronic Disease Reports:  
Mortality Trends — United States, 1979–1986**

CDC's National Center for Health Statistics (NCHS) has developed the system by which deaths are reported, coded, and tabulated to produce official U.S. mortality statistics (1). Crude and adjusted mortality rates as reported by NCHS are the standard for reporting mortality statistics. Some alternative approaches may be useful to focus on particular events of epidemiologic importance (2). This report describes U.S. mortality trends from 1979 to 1986 using two departures from standard mortality reporting: the data were age-adjusted to the 1980 total U.S. population, and in some cases, different *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) groupings were used to form diagnostic categories (e.g., chronic obstructive pulmonary disease [OPD] included only cases likely to be associated with smoking).

Between 1979 and 1986, the total age-standardized mortality rate in the United States declined by 8%. However, this "average" change obscures considerable diversity in changing mortality rates for specific diseases: nine major chronic disease groupings demonstrated differing trends over this period (Figure 1). The largest decreases occurred for stroke (ICD-9-CM 430–434, 436–438)\*, coronary heart disease (CHD) (ICD-9-CM 410–414, 429.2), and cirrhosis (ICD-9-CM 571) (Figure 1). In contrast, the portion of OPD likely to be related to smoking (ICD-9-CM 491, 492, 496) increased by 33% and lung cancer (ICD-9-CM 162), by 15%. Three cancers showed diverse trends: female breast cancer (ICD-9-CM 174) increased by 5%; colorectal cancer (ICD-9-CM 153, 154) declined by 7%, and cervical cancer (ICD-9-CM 180) declined by 18%. Diabetes mellitus (ICD-9-CM 250) decreased moderately (3%) as an underlying cause of death.

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**Editorial Note:** The diverse trends in mortality for these nine diseases suggest that shared risk factors may have different effects. For example, the overall national prevalence of smoking declined by 13% (from 33.5% to 29.1%) during 1979–1987 (3). During the same period, stroke and CHD mortality decreased substantially; in contrast, smoking-related OPD and lung cancer mortality markedly increased.

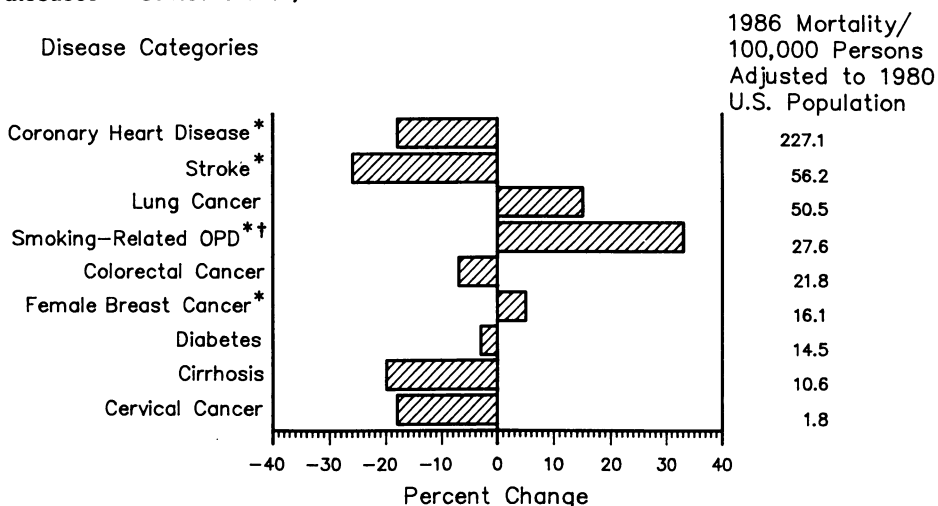
\*See Chronic Disease Reports: Stroke figure and tables following this article.

*Mortality Trends — Continued*

This diversity in the trends for smoking-related disorders may result from a combination of epidemiologic circumstances. Smoking is a stronger risk factor (i.e., is associated with greater relative risks) for lung cancer and this grouping of OPD than for stroke or heart disease (4). In addition, the latency between initiation of smoking and subsequent death is much longer for persons with pulmonary sequelae; recent mortality trends are thus less likely to be associated with recent trends in the risk factor. Finally, smoking may be the primary causative agent in lung cancer and this grouping of OPD, whereas smoking is only one of several interrelated risks for stroke and heart disease. Prevalences of these risks, which include hypertension, hypercholesterolemia, physical inactivity, and obesity, may have changed among the population in recent years (5).

The divergent trends in breast and cervical cancer mortality may also result from a variety of risk factors (4,6), of which few are amenable to direct intervention. Effective screening tests are available for both cancers. The Pap smear for cervical cancer is a well-established clinical tool, and its use may account for some of the decline in cervical cancer mortality. However, efficacy of the Pap smear has never been directly tested nor a systematic national program for its application conducted. The screening mammogram, a more recent development, was effective in a controlled setting (7), but no systematic national program exists for the widespread dissemination of mammographic services. The lack of such a program may not directly contribute to the increase in mortality but could be important in the failure to demonstrate desired decreases. Finally, the age, race, and socioeconomic differences in survival patterns exhibited by persons with cervical or breast cancer, as well as by those with colorectal cancer (8), may also play an important role in current mortality trends.

**FIGURE 1. Percent change in mortality and 1986 mortality, by selected chronic diseases — United States, 1979–1986**



\*Groupings of ICD codes differ from groupings used by NCHS and the World Health Organization.

†Obstructive pulmonary disease (that component of chronic obstructive pulmonary disease most closely associated with smoking).

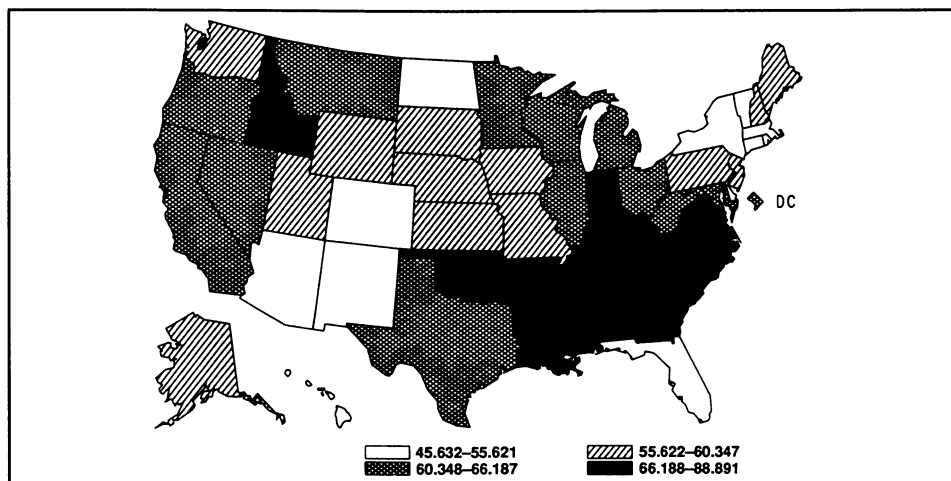
*Mortality Trends – Continued*

Death attributed to a chronic disease results from a series of intertwined biologic and epidemiologic events, including interactions among risk factors, diseases, and coding practices. Although cause-specific mortality trends using nonstandard rubrics are a useful measure of overall effect, they must be interpreted cautiously. Nonstandard use of diagnostic categories provides opportunities for special epidemiologic focus, but care should be taken to make such use explicit.

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**CHRONIC DISEASE REPORTS: STROKE, FIGURE 1. Age-adjusted stroke mortality rates per 100,000 persons, by quartile – United States, 1986\***



\*1986 standard U.S. age distribution as used in *MMWR* 1989;38(suppl S-1): age 0–4 years, population 18,130,742; 5–9 years, 17,293,438; 10–14 years, 16,565,666; 15–19 years, 18,611,458; 20–24 years, 20,419,174; 25–29 years, 22,012,892; 30–34 years, 20,777,136; 35–39 years, 18,725,383; 40–44 years, 14,347,820; 45–49 years, 11,928,235; 50–54 years, 10,887,654; 55–59 years, 11,267,795; 60–64 years, 10,961,436; 65–69 years, 9,661,337; 70–74 years, 7,663,643; 75–79 years, 5,628,441; 80–84 years, 3,421,281; ≥85 years, 2,795,724.

**CHRONIC DISEASE REPORTS: STROKE, TABLE 1. Stroke indices (ICD-9-CM 430–434, 436–438) — United States**

Measure	No.	Rate per 100,000
Mortality (1986)	124,964	52
Prevalence*	2,719,470	1,140
Hospitalizations†	660,750	277
YPLL‡	246,479	103

Risk factor	Prevalence (%)	Relative risk	Population-attributable risk (%)§	Estimated preventable deaths**
Hypertension (>159 mm Hg)	17.7 <sup>††</sup>	3.2 <sup>§§</sup>	28.0	34,990
Hypertension (140–159 mm Hg)	12.0 <sup>††</sup>	1.6 <sup>§§</sup>	6.7	8,373
Smoking (current)	26.5 <sup>¶¶</sup>	1.4 <sup>***</sup>	9.6	11,997
Diabetes	2.8*	3.1 <sup>†††</sup>	5.6	6,998

\*NCHS, Health Interview Survey, 1987. As reported by interviewees: "Has anyone in the family EVER had a stroke or cerebrovascular accident?"

†NCHS, Hospital Discharge Survey, 1987 (ICD-9-CM 430–434, 436–437).

‡CDC. Years of potential life lost before age 65—United States, 1987. MMWR 1989;38:27–9 (ICD-9-CM 430–438).

§Percentage of mortality attributable to the specific risk factor. CDC. Chronic disease reports in the *Morbidity and Mortality Weekly Report (MMWR)*. MMWR 1989;38(suppl S-1).

\*\*Population-attributable risk x mortality. Because they may not be independent, estimated preventable deaths from hypertension, smoking, and diabetes should not be added.

††NCHS, Second National Health and Nutrition Examination Survey, 1976–1980. Systolic blood pressure in persons aged 18–74 years.

§§Risk relative to persons with systolic blood pressure <140. Kannel WB, Wolf PA, McGee DL, et al. Systolic blood pressure, arterial rigidity, and risk of stroke: the Framingham Study. JAMA 1981;245:1225–9.

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\*\*\*Rice DP, Hodgson TA, Sinsheimer P, Browner W, Kopstein AN. The economic costs of the health effects of smoking, 1984. Milbank Q 1986;64:489–547.

†††Kannel WB, McGee DL. Diabetes and cardiovascular disease: the Framingham Study. JAMA 1979;241:2035–8.

**CHRONIC DISEASE REPORTS: STROKE, TABLE 2. Age-adjusted stroke mortality, by state — United States, 1986**

State	Deaths	Rate per 100,000	Rank by rate
Alabama	2,985	75.2	4
Alaska	85	57.3	34
Arizona	1,436	46.4	50
Arkansas	1,986	71.6	8
California	15,035	62.1	20
Colorado	1,307	51.6	47
Connecticut	1,827	52.0	45
Delaware	271	45.6	51
District of Columbia	409	62.7	19
Florida	8,656	54.7	41
Georgia	4,156	83.7	2
Hawaii	404	49.3	49
Idaho	592	66.2	13
Illinois	7,076	61.2	23
Indiana	3,916	71.1	9
Iowa	2,222	58.5	31
Kansas	1,706	57.2	35
Kentucky	2,623	70.3	11
Louisiana	2,578	70.3	12
Maine	765	55.9	38
Maryland	2,308	60.5	25
Massachusetts	3,752	54.3	42
Michigan	5,409	63.1	17
Minnesota	3,098	63.7	16
Mississippi	1,907	74.3	6
Missouri	3,603	60.2	27
Montana	491	60.4	26
Nebraska	1,176	58.4	32
Nevada	419	60.7	24
New Hampshire	584	56.4	36
New Jersey	4,409	55.6	39
New Mexico	566	49.8	48
New York	10,008	51.8	46
North Carolina	4,479	77.9	3
North Dakota	403	52.8	43
Ohio	6,858	62.9	18
Oklahoma	2,451	71.0	10
Oregon	1,910	65.2	15
Pennsylvania	7,961	58.4	33
Rhode Island	624	52.2	44
South Carolina	2,445	88.9	1
South Dakota	532	58.8	30
Tennessee	3,582	75.0	5
Texas	8,268	61.6	21
Utah	648	59.4	29
Vermont	316	55.4	40
Virginia	3,541	72.6	7
Washington	2,555	59.5	28
West Virginia	1,357	65.4	14
Wisconsin	3,312	61.4	22
Wyoming	197	56.1	37
<b>Total</b>	<b>124,964</b>	<b>51.8</b>	

## Hospital Discharge Rates for Cerebrovascular Disease – United States, 1970–1986

Despite a nearly 50% decline in cerebrovascular mortality in the past 30 years, stroke remains the third leading cause of death and continues to be a major public health problem in the United States. The direct health-care costs of stroke were estimated to be approximately \$3.3 billion annually in 1976 (1). Hospitalizations represent more than one third of those costs.

This report describes national trends in hospital discharge rates from 1970 to 1986 for cerebrovascular disease and its components. The annual number of hospital discharges was determined from the first-listed diagnosis in the National Hospital Discharge Survey (NHDS) (2) of CDC's National Center for Health Statistics (NCHS).<sup>\*</sup> Data for the NHDS are obtained from a multistage, stratified cluster sample of discharges from nonfederal short-stay hospitals in the 50 states and the District of

<sup>\*</sup>Diagnoses for 1970–1978 are based on the *International Classification of Diseases (ICD), Eighth Revision, Adapted (ICDA-8)* (3); those for 1979–1986, on the *ICD, Ninth Revision, Clinical Modification (ICD-9-CM)* (4).

(Continued on page 199)

**TABLE I. Summary – cases of specified notifiable diseases, United States**

Disease	12th Week Ending			Cumulative, 12th Week Ending		
	Mar. 25, 1989	Mar. 26, 1988	Median 1984-1988	Mar. 25, 1989	Mar. 26, 1988	Median 1984-1988
Acquired Immunodeficiency Syndrome (AIDS)	172	U <sup>*</sup>	148	7,464	6,632	2,609
Aseptic meningitis	50	88	75	904	950	950
Encephalitis: Primary (arthropod-borne & unspc)	6	10	22	124	163	191
Post-infectious	-	3	3	17	18	19
Gonorrhea: Civilian	10,597	12,762	14,800	149,817	159,001	188,615
Military	424	238	322	2,681	2,969	3,976
Hepatitis: Type A	643	628	456	7,755	5,806	5,252
Type B	442	456	526	4,515	4,651	5,515
Non A, Non B	42	72	74	523	582	745
Unspecified	58	49	82	617	482	1,020
Legionellosis	15	19	16	200	198	152
Leprosy	2	4	3	33	34	50
Malaria	22	11	14	221	157	155
Measles: Total <sup>†</sup>	152	43	58	1,646	490	559
Indigenous	145	40	49	1,539	443	489
Imported	7	3	3	107	47	70
Meningococcal infections	70	75	75	806	871	819
Mumps	123	116	116	1,246	1,204	952
Pertussis	19	86	41	385	530	436
Rubella (German measles)	8	5	10	50	53	76
Syphilis (Primary & Secondary): Civilian	689	856	561	9,127	8,526	6,535
Military	6	4	4	73	56	54
Toxic Shock syndrome	7	4	4	74	71	71
Tuberculosis	328	431	425	4,037	4,040	4,236
Tularemia	1	2	1	11	20	17
Typhoid Fever	6	6	6	77	80	59
Typhus fever, tick-borne (RMSF)	1	1	1	21	15	11
Rabies, animal	83	111	109	861	749	976

**TABLE II. Notifiable diseases of low frequency, United States**

	Cum. 1989		Cum. 1989
Anthrax	-	Leptospirosis	32
Botulism: Foodborne	6	Plague	-
Infant	3	Polioomyelitis, Paralytic	-
Other	2	Psittacosis (Oreg. 1)	20
Brucellosis (Okla. 1)	6	Rabies, human	-
Cholera	-	Tetanus	9
Congenital rubella syndrome	1	Trichinosis (Mass. 1)	3
Congenital syphilis, ages <1 year	-		
Diphtheria	-		

<sup>\*</sup>Because AIDS cases are not received weekly from all reporting areas, comparison of weekly figures may be misleading.

<sup>†</sup>Five of the 152 reported cases for this week were imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

**TABLE III. Cases of specified notifiable diseases, United States, weeks ending March 25, 1989 and March 26, 1988 (12th Week)**

Reporting Area	AIDS	Aseptic Mening- itis	Encephalitis		Gonorrhea (Civilian)		Hepatitis (Viral), by type				Legionel- losis	Leprosy
			Primary	Post-in- fectious			A	B	NA,NB	Unspeci- fied		
	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	7,464	904	124	17	149,817	159,001	7,755	4,515	523	617	200	33
NEW ENGLAND	363	38	4	-	4,160	4,743	154	259	26	25	16	2
Maine	21	1	1	-	69	104	4	13	3	1	3	-
N.H.	8	1	-	-	51	73	26	17	5	2	-	-
Vt.	2	-	-	-	20	41	5	9	2	-	-	-
Mass.	199	17	2	-	1,591	1,701	52	163	10	18	11	2
R.I.	18	12	-	-	348	416	5	26	2	2	2	-
Conn.	115	7	1	-	2,081	2,408	62	31	4	2	-	-
MID. ATLANTIC	2,192	127	13	1	21,102	23,911	1,134	679	51	57	54	1
Upstate N.Y.	262	44	7	1	3,721	2,775	272	168	17	3	19	-
N.Y. City	1,174	23	1	-	8,950	10,250	71	155	10	42	2	-
N.J.	532	-	5	-	3,192	3,498	143	138	13	5	5	-
Pa.	224	60	-	-	5,239	7,388	648	218	11	7	28	1
E.N. CENTRAL	626	130	42	-	25,355	25,369	369	506	48	16	55	-
Ohio	106	35	13	-	6,989	5,736	92	147	6	1	33	-
Ind.	140	38	14	-	1,611	2,177	22	86	5	1	11	-
Ill.	235	4	2	-	7,606	7,150	130	55	3	7	-	-
Mich.	117	47	10	-	7,731	8,206	92	162	23	7	6	-
Wis.	28	6	3	-	1,418	2,100	33	56	11	-	5	-
W.N. CENTRAL	178	35	3	1	6,582	6,202	224	147	13	3	6	-
Minn.	37	4	-	1	650	843	21	33	1	2	2	-
Iowa	19	8	2	-	529	396	17	12	4	-	2	-
Mo.	100	12	-	-	4,127	3,535	128	82	3	1	-	-
N. Dak.	2	3	-	-	26	42	1	6	2	-	-	-
S. Dak.	3	1	1	-	62	137	-	3	3	-	-	-
Nebr.	6	2	-	-	310	376	38	6	-	-	2	-
Kans.	11	5	-	-	878	873	19	5	-	-	-	-
S. ATLANTIC	1,572	197	18	3	42,994	43,977	580	957	71	104	25	-
Del.	35	6	1	-	691	636	17	39	-	1	3	-
Md.	182	21	3	-	4,633	4,448	129	169	11	12	9	-
D.C.	101	4	-	-	2,761	2,864	1	1	1	-	-	-
Va.	153	44	8	-	3,739	3,174	41	67	12	58	1	-
W. Va.	8	2	2	-	324	351	6	20	1	1	-	-
N.C.	104	26	-	1	6,390	6,970	117	266	27	-	7	-
S.C.	57	6	-	-	3,884	3,374	8	119	-	4	1	-
Ga.	260	18	1	-	8,105	8,159	96	97	5	4	1	-
Fla.	672	70	3	2	12,467	14,001	165	179	14	24	3	-
E.S. CENTRAL	182	99	9	1	13,169	12,105	65	338	44	1	5	-
Ky.	34	27	2	1	1,146	1,012	30	97	16	-	1	-
Tenn.	45	11	-	-	4,194	3,825	14	173	9	-	3	-
Ala.	57	49	7	-	4,431	4,339	14	62	18	1	1	-
Miss.	46	12	-	-	3,398	2,929	7	6	1	-	-	-
W.S. CENTRAL	699	56	12	-	16,739	18,662	866	365	36	140	9	7
Ark.	22	3	-	-	1,668	1,604	50	17	2	2	1	-
La.	107	5	1	-	3,624	4,324	53	40	3	-	-	-
Okla.	26	11	5	-	1,484	1,594	106	43	8	6	6	-
Tex.	544	37	6	-	9,963	11,140	657	265	23	132	2	7
MOUNTAIN	217	32	4	1	3,034	3,410	1,214	302	60	57	12	1
Mont.	1	-	-	-	48	93	11	14	1	-	2	1
Idaho	4	-	-	-	51	82	54	21	4	2	-	-
Wyo.	5	-	-	-	33	50	6	1	-	-	-	-
Colo.	64	8	1	1	572	863	164	48	19	29	1	-
N. Mex.	11	4	-	-	314	333	134	53	11	1	-	-
Ariz.	59	15	2	-	1,157	1,149	669	102	12	21	5	-
Utah	16	4	1	-	119	153	76	19	8	3	3	-
Nev.	57	1	-	-	740	687	100	44	5	1	1	-
PACIFIC	1,435	190	19	10	16,682	20,622	3,149	962	174	214	18	22
Wash.	104	-	-	-	1,419	1,638	621	148	41	10	2	1
Oreg.	50	-	-	-	682	723	533	91	23	4	1	-
Calif.	1,261	177	17	10	14,269	17,791	1,674	710	106	198	14	17
Alaska	3	-	2	-	212	266	281	12	4	2	1	-
Hawaii	17	13	-	-	100	204	40	1	-	-	-	4
Guam	-	-	-	-	-	37	-	-	-	-	-	-
P.R.	330	27	1	-	213	367	18	59	4	4	-	3
V.I.	15	-	-	-	146	85	-	4	-	-	-	-
Amer. Samoa	-	-	-	-	-	15	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	14	-	-	-	-	-	-

N: Not notifiable

U: Unavailable

C.N.M.I.: Commonwealth of the Northern Mariana Islands

**TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending March 25, 1989 and March 26, 1988 (12th Week)**

Reporting Area	Malaria	Measles (Rubeola)					Menin- gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
		Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	Cum. 1989	1989	Cum. 1989	1989	Cum. 1989	Cum. 1988	1989	Cum. 1989
UNITED STATES	221	145	1,539	7	107	490	806	123	1,246	19	385	530	8	50	53
NEW ENGLAND	15	-	19	-	5	1	59	2	11	1	12	70	-	-	-
Maine	-	-	-	-	-	-	8	-	-	-	4	11	-	-	-
N.H.	1	-	-	-	-	-	9	1	8	-	5	21	-	-	-
Vt.	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-
Mass.	10	-	-	-	3	1	22	1	2	-	-	31	-	-	-
R.I.	3	-	17	-	2	-	1	-	-	-	2	-	-	-	-
Conn.	1	-	2	-	-	-	15	-	1	1	1	7	-	-	-
MID. ATLANTIC	30	-	50	5	30	119	78	-	41	1	35	15	-	2	4
Upstate N.Y.	8	-	4	5†	16	1	36	-	12	1	16	6	-	1	1
N.Y. City	12	U	9	U	13	13	17	U	-	U	1	1	U	1	1
N.J.	4	-	28	-	1	-	8	-	11	-	14	2	-	-	1
Pa.	6	-	9	-	-	-	17	-	18	-	4	6	-	-	1
E.N. CENTRAL	11	10	115	-	35	34	86	6	123	1	19	55	-	4	20
Ohio	4	-	63	-	34	3	45	-	8	-	1	8	-	-	-
Ind.	1	-	-	-	-	-	10	-	14	-	6	24	-	-	-
Ill.	3	10	52	-	-	20	9	-	49	-	-	3	-	3	16
Mich.	1	-	-	-	-	11	15	6	44	1	6	10	-	-	4
Wis.	2	-	-	-	1	-	7	-	8	-	6	10	-	1	-
W.N. CENTRAL	3	-	69	-	1	-	23	-	224	-	11	30	-	1	-
Minn.	2	-	-	-	-	-	6	-	-	-	-	3	-	-	-
Iowa	-	-	-	-	-	-	-	-	7	-	6	14	-	-	-
Mo.	1	-	60	-	-	-	5	-	32	-	4	3	-	1	-
N. Dak.	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-
S. Dak.	-	-	-	-	-	-	4	-	-	-	-	2	-	-	-
Nebr.	-	-	-	-	-	-	7	-	1	-	-	-	-	-	-
Kans.	-	-	9	-	1	-	1	-	184	-	1	2	-	-	-
S. ATLANTIC	43	10	102	-	7	111	134	33	199	1	31	49	-	-	-
Del.	1	-	-	-	-	-	1	-	-	-	-	3	-	-	-
Md.	10	-	5	-	5	2	23	24	109	1	4	9	-	-	-
D.C.	3	-	-	-	2	-	6	2	35	-	-	-	-	-	-
Va.	6	-	-	-	-	41	16	1	31	-	3	7	-	-	-
W. Va.	1	-	-	-	-	2	6	1	4	-	6	-	-	-	-
N.C.	9	9	95	-	-	1	18	-	6	-	10	19	-	-	-
S.C.	1	-	-	-	-	-	13	1	6	-	-	-	-	-	-
Ga.	3	-	-	-	-	-	20	-	1	-	4	8	-	-	-
Fla.	9	1	2	-	-	65	31	4	7	-	4	3	-	-	-
E.S. CENTRAL	3	-	2	-	-	2	32	2	55	-	22	8	-	-	-
Ky.	-	-	1	-	-	-	20	-	9	-	-	-	-	-	-
Tenn.	-	-	-	-	-	-	2	-	13	-	5	6	-	-	-
Ala.	2	-	1	-	-	-	8	-	4	-	17	-	-	-	-
Miss.	1	-	-	-	-	2	2	N	N	-	-	2	-	-	-
W.S. CENTRAL	13	120	932	-	18	8	66	52	417	2	7	29	-	5	1
Ark.	-	-	-	-	2	-	3	7	53	1	3	5	-	-	1
La.	-	-	1	-	-	-	10	-	109	1	1	2	-	-	-
Okla.	1	8	23	-	-	8	6	22	80	-	3	22	-	-	-
Tex.	12	112	908	-	16	-	47	23	175	-	-	-	-	5	-
MOUNTAIN	10	-	13	2	5	109	21	9	53	8	181	186	1	2	2
Mont.	-	-	12	-	1	-	1	-	1	-	-	1	1	1	-
Idaho	2	-	-	-	1	-	-	1	3	1	11	158	-	-	-
Wyo.	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Colo.	1	-	-	-	1	109	8	-	5	1	16	3	-	-	1
N. Mex.	1	-	-	2‡	2	-	1	N	N	-	2	2	-	-	-
Ariz.	2	-	1	-	-	-	10	8	40	6	148	12	-	-	-
Utah	-	-	-	-	-	-	1	-	2	-	3	8	-	-	-
Nev.	3	-	-	-	-	-	-	-	2	-	1	1	-	1	1
PACIFIC	93	5	237	-	6	106	307	19	123	5	67	88	7	36	26
Wash.	3	-	-	-	1	-	24	-	10	1	13	13	-	-	-
Oreg.	3	-	-	-	-	1	21	N	N	1	2	-	-	-	-
Calif.	85	5	236	-	2	103	259	19	108	1	50	53	5	34	23
Alaska	2	-	-	-	-	-	2	-	-	-	-	2	-	-	-
Hawaii	-	-	1	-	3	2	1	-	5	2	2	20	2	2	3
Guam	-	U	-	U	-	1	-	U	-	U	-	-	U	-	1
P.R.	-	-	127	-	-	47	2	-	1	-	2	2	-	2	-
V.I.	-	-	-	-	-	-	-	1	3	-	-	-	-	-	-
Amer. Samoa	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-
C.N.M.I.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

\*For measles only, imported cases includes both out-of-state and international importations.

N: Not notifiable U: Unavailable †International ‡Out-of-state



**TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending March 25, 1989 and March 26, 1988 (12th Week)**

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic- shock Syndrome	Tuberculosis		Tula- remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1988	Cum. 1989	Cum. 1989	Cum. 1989	Cum. 1989
UNITED STATES	9,127	8,526	74	4,037	4,040	11	77	21	861
NEW ENGLAND	356	252	3	99	64	-	9	-	1
Maine	1	3	3	2	2	-	-	-	-
N.H.	-	2	-	4	-	-	-	-	-
Vt.	-	-	-	1	-	-	-	-	-
Mass.	121	99	-	51	38	-	4	-	-
R.I.	9	9	-	17	7	-	4	-	-
Conn.	225	139	-	24	17	-	1	-	1
MID. ATLANTIC	1,833	1,615	12	797	847	1	15	3	124
Upstate N.Y.	172	105	1	38	135	-	2	1	1
N.Y. City	1,033	1,064	1	484	422	-	11	-	-
N.J.	302	183	4	126	136	-	1	-	-
Pa.	326	263	6	149	154	1	1	2	123
E.N. CENTRAL	322	246	13	472	488	1	6	1	14
Ohio	23	25	7	79	91	-	1	1	-
Ind.	12	17	4	32	51	-	1	-	-
Ill.	153	126	-	209	189	-	1	-	2
Mich.	125	71	2	136	125	-	3	-	3
Wis.	9	7	-	16	32	1	-	-	9
W.N. CENTRAL	69	49	17	118	120	2	4	1	70
Minn.	6	4	5	26	21	-	1	-	28
Iowa	11	3	3	24	13	-	2	1	-
Mo.	34	30	2	39	53	2	1	-	5
N. Dak.	-	1	-	2	2	-	-	-	5
S. Dak.	-	-	1	7	12	-	-	-	20
Nebr.	10	5	5	6	4	-	-	-	7
Kans.	8	6	1	14	15	-	-	-	5
S. ATLANTIC	3,333	2,985	6	855	896	1	7	12	287
Del.	43	42	-	4	9	-	-	-	3
Md.	171	154	-	69	73	-	1	1	58
D.C.	192	138	-	43	42	-	2	-	2
Va.	134	105	-	77	105	1	1	-	71
W. Va.	4	1	-	21	21	-	-	-	17
N.C.	191	192	4	70	52	-	2	10	-
S.C.	154	155	1	89	89	-	-	1	51
Ga.	752	470	-	119	149	-	-	-	47
Fla.	1,692	1,728	1	363	356	-	1	-	38
E.S. CENTRAL	639	490	1	333	299	1	1	2	77
Ky.	16	14	-	93	98	1	1	2	41
Tenn.	253	198	-	96	48	-	-	-	18
Ala.	234	145	1	115	100	-	-	-	18
Miss.	136	133	-	29	53	-	-	-	-
W.S. CENTRAL	1,220	942	4	439	453	2	5	1	147
Ark.	94	47	-	56	41	1	-	-	19
La.	254	181	-	61	74	-	1	-	-
Okla.	15	39	2	28	45	1	-	1	16
Tex.	857	675	2	294	293	-	4	-	112
MOUNTAIN	178	181	4	116	98	1	-	1	32
Mont.	-	2	-	4	-	-	-	-	19
Idaho	-	-	1	3	-	-	-	-	-
Wyo.	1	-	-	-	-	-	-	-	4
Colo.	31	25	-	2	15	1	-	1	-
N. Mex.	4	17	1	19	24	-	-	-	6
Ariz.	39	43	2	61	46	-	-	-	2
Utah	5	7	-	9	-	-	-	-	-
Nev.	98	87	-	18	13	-	-	-	1
PACIFIC	1,177	1,766	14	808	775	2	30	-	109
Wash.	52	61	1	44	45	-	-	-	-
Oreg.	69	65	-	27	29	-	-	-	-
Calif.	1,048	1,631	12	687	656	2	29	-	64
Alaska	3	2	-	12	9	-	-	-	45
Hawaii	5	7	1	38	36	-	1	-	-
Guam	-	-	-	-	7	-	-	-	-
P.R.	102	147	-	52	38	-	-	-	10
V.I.	1	1	-	1	3	-	-	-	-
Amer. Samoa	-	-	-	-	3	-	-	-	-
C.N.M.I.	-	1	-	-	2	-	-	-	-

U: Unavailable

**TABLE IV. Deaths in 121 U.S. cities,\* week ending  
March 25, 1989 (12th Week)**

Reporting Area	All Causes, By Age (Years)						P&I**	Reporting Area	All Causes, By Age (Years)						P&I**
	All Ages	≥65	45-64	25-44	1-24	<1			All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	642	456	113	43	8	22	67	S. ATLANTIC	1,451	886	278	168	59	56	79
Boston, Mass.	186	116	40	17	5	8	20	Atlanta, Ga.	200	101	42	30	7	20	8
Bridgeport, Conn.†	33	27	5	1	-	-	2	Baltimore, Md.	265	169	53	31	6	6	17
Cambridge, Mass.	28	22	4	2	-	-	8	Charlotte, N.C.	78	46	8	11	2	10	5
Fall River, Mass.	27	25	1	1	-	-	3	Jacksonville, Fla.	110	63	25	10	11	1	5
Hartford, Conn.	56	35	8	7	1	5	1	Miami, Fla.	119	61	32	19	5	2	1
Lowell, Mass.	35	25	8	2	-	-	2	Norfolk, Va.	65	37	20	5	1	2	3
Lynn, Mass.	18	12	4	2	-	-	6	Richmond, Va.	94	58	20	8	4	3	11
New Bedford, Mass.	25	24	-	-	-	1	1	Savannah, Ga.	49	36	7	3	2	1	5
New Haven, Conn.	29	23	4	1	1	-	5	St. Petersburg, Fla.	105	85	8	4	2	6	3
Providence, R.I.	40	28	8	2	1	1	1	Tampa, Fla.	99	65	17	12	3	-	13
Somerville, Mass.	10	10	-	-	-	-	1	Washington, D.C.	234	141	42	32	14	5	8
Springfield, Mass.	62	41	12	6	-	3	7	Wilmington, Del.	33	24	4	3	2	-	-
Waterbury, Conn.	29	21	7	1	-	-	3	E.S. CENTRAL	937	618	205	49	25	39	80
Worcester, Mass.	64	47	12	1	-	4	7	Birmingham, Ala.	127	86	27	8	2	4	12
MID. ATLANTIC	3,017	2,005	599	286	61	64	213	Chattanooga, Tenn.	39	28	8	2	-	1	7
Albany, N.Y.	42	31	8	1	1	1	2	Knoxville, Tenn.	76	49	18	3	4	2	12
Allentown, Pa.	24	19	5	-	-	-	1	Louisville, Ky.	113	73	28	5	3	4	6
Buffalo, N.Y.	100	69	25	5	1	-	8	Memphis, Tenn.	330	209	70	17	14	19	29
Camden, N.J.	25	12	8	2	1	2	-	Mobile, Ala.	55	34	14	5	-	2	4
Elizabeth, N.J.	36	30	5	1	-	-	3	Montgomery, Ala.	55	35	12	3	1	4	2
Erie, Pa.†	49	45	4	-	-	-	7	Nashville, Tenn.	142	104	28	6	1	3	8
Jersey City, N.J.	58	31	14	7	3	3	-	W.S. CENTRAL	1,770	1,094	389	179	61	47	69
N.Y. City, N.Y.	1,561	1,002	298	188	35	38	67	Austin, Tex.	60	39	12	8	1	-	5
Newark, N.J.	104	45	35	14	3	5	7	Baton Rouge, La.	39	23	10	3	1	2	-
Paterson, N.J.	19	14	2	1	1	1	2	Corpus Christi, Tex.	48	27	10	5	2	4	2
Philadelphia, Pa.	494	326	109	40	9	10	52	Dallas, Tex.	196	108	46	28	9	5	7
Pittsburgh, Pa.†	94	65	22	2	3	2	12	El Paso, Tex.	55	34	15	4	2	-	3
Reading, Pa.	37	29	3	4	1	-	7	Fort Worth, Tex	124	75	28	10	6	5	7
Rochester, N.Y.	123	94	18	9	1	1	22	Houston, Tex.‡	734	436	169	89	24	16	18
Schenectady, N.Y.	35	31	2	1	1	-	-	Little Rock, Ark.	62	44	14	-	1	3	4
Scranton, Pa.†	40	32	7	1	-	-	4	New Orleans, La.	105	69	21	10	3	2	-
Syracuse, N.Y.	82	61	15	4	1	1	2	San Antonio, Tex.	223	154	44	11	7	7	17
Trenton, N.J.	33	17	12	4	-	-	5	Shreveport, La.	60	40	10	6	4	-	3
Utica, N.Y.	21	17	3	1	-	-	4	Tulsa, Okla.	64	45	10	5	1	3	3
Yonkers, N.Y.	40	35	4	1	-	-	8	MOUNTAIN	709	483	120	46	26	32	52
E.N. CENTRAL	2,258	1,506	467	144	64	77	135	Albuquerque, N. Mex.	94	64	12	7	8	1	7
Akron, Ohio	48	30	10	3	3	2	-	Colo. Springs, Colo.	40	26	12	2	-	-	6
Canton, Ohio	33	28	5	-	-	-	3	Denver, Colo.	89	55	15	8	2	9	5
Chicago, Ill.‡	564	362	125	45	10	22	16	Las Vegas, Nev.	79	48	19	6	2	4	6
Cincinnati, Ohio	172	115	31	12	9	5	31	Ogden, Utah	27	19	3	1	1	3	4
Cleveland, Ohio	136	78	37	11	6	4	2	Phoenix, Ariz.	161	103	34	9	7	8	4
Columbus, Ohio	117	92	14	4	3	4	2	Pueblo, Colo.	29	27	1	-	1	-	2
Dayton, Ohio	122	78	27	11	3	3	6	Salt Lake City, Utah	47	29	6	6	2	4	-
Detroit, Mich.	245	153	48	22	15	7	14	Tucson, Ariz.	143	112	18	7	3	3	18
Evansville, Ind.	47	32	11	3	-	1	5	PACIFIC	1,926	1,271	355	184	46	63	152
Fort Wayne, Ind.	55	36	13	3	3	-	1	Berkeley, Calif.	23	16	5	2	-	-	-
Gary, Ind.	13	5	6	-	-	2	-	Fresno, Calif.	59	41	10	3	1	4	2
Grand Rapids, Mich.	62	37	16	6	1	2	7	Glendale, Calif.	19	15	3	1	-	-	5
Indianapolis, Ind.	189	127	41	12	2	7	7	Honolulu, Hawaii	67	48	11	2	2	4	6
Madison, Wis.	43	26	6	1	4	6	1	Long Beach, Calif.	91	54	22	9	3	3	15
Milwaukee, Wis.	120	87	27	1	2	3	11	Los Angeles Calif.	414	255	77	60	12	5	23
Peoria, Ill.	43	32	7	1	2	1	3	Oakland, Calif.‡	94	61	19	9	3	2	5
Rockford, Ill.	47	31	8	4	1	3	9	Pasadena, Calif.	22	17	3	2	-	-	1
South Bend, Ind.	39	30	8	1	-	-	3	Portland, Oreg.	127	94	20	6	1	6	4
Toledo, Ohio	95	71	18	3	-	3	11	Sacramento, Calif.	154	108	28	10	3	5	21
Youngstown, Ohio	68	56	9	1	-	2	3	San Diego, Calif.	227	160	32	19	4	10	29
W.N. CENTRAL	807	597	133	50	13	14	42	San Francisco, Calif.	193	118	36	31	3	5	6
Des Moines, Iowa	64	44	15	3	2	-	6	San Jose, Calif.	171	107	32	15	6	11	19
Duluth, Minn.	26	19	5	-	1	1	3	Seattle, Wash.	145	96	30	10	6	3	7
Kansas City, Kans.	39	24	7	4	3	1	-	Spokane, Wash.	66	45	16	2	1	2	7
Kansas City, Mo.	149	101	24	18	3	3	13	Tacoma, Wash.	54	36	11	3	1	3	2
Lincoln, Nebr.	32	29	3	-	-	-	-	TOTAL	13,517††	8,916	2,659	1,149	363	414	889
Minneapolis, Minn.	164	132	23	8	-	1	12								
Omaha, Nebr.	98	67	19	5	2	5	3								
St. Louis, Mo.	168	130	25	9	1	3	4								
St. Paul, Minn.	61	48	9	3	1	-	1								
Wichita, Kans.	6	3	3	-	-	-	-								

\*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

\*\*Pneumonia and influenza.

†Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

††Total includes unknown ages.

‡Data not available. Figures are estimates based on average of past available 4 weeks.

*Cerebrovascular Disease – Continued*

Columbia. The NHDS collects approximately 200,000 records a year. Each year, 3237–4577 patients in the sample were discharged with a first-listed diagnosis of cerebrovascular disease. Population estimates were determined from data provided by the Bureau of the Census (5) and Demo-Detail<sup>†</sup> (6).

The general category of cerebrovascular disease under both ICDA-8 and ICD-9-CM includes all discharged persons with a first-listed diagnosis of 430 through 438 (3,4). This grouping was subdivided for further analysis as follows: intracranial hemorrhage (ICDA-8: 430–431; ICD-9-CM: 430–432); occlusion of cerebral arteries (ICDA-8: 433–434; ICD-9-CM: 434); transient cerebral ischemia (ICDA-8 and ICD-9-CM: 435); acute ill-defined cerebrovascular disease (ICDA-8 and ICD-9-CM: 436); and other cerebrovascular disease (ICDA-8: 432, 437–438; ICD-9-CM: 433, 437–438) (7).

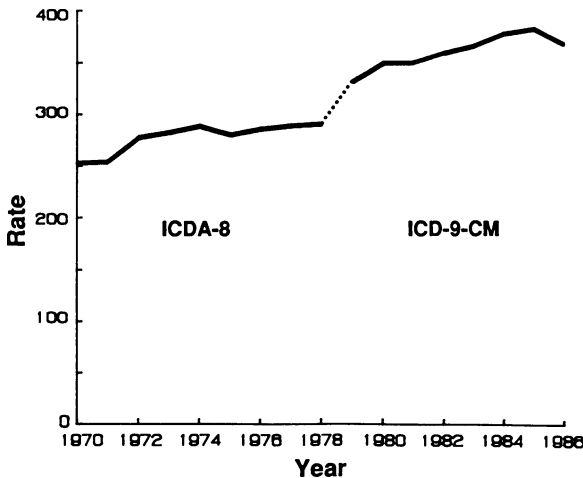
Observed changes in hospital discharge rates from 1978 to 1979 reflect a mixture of procedural changes in coding practices and real changes in hospitalization rates.<sup>§</sup> For this reason, the following descriptions of trends from 1970 through 1986 omit changes in rates from 1978 to 1979 (Figures 1 and 2).

From 1970 through 1986, hospital discharge rates per 100,000 population for cerebrovascular disease ranged from a low of 254 in 1970 to a high of 384 in 1985. Hospital discharges per 100,000 population for cerebrovascular disease increased an average of 4.9 per year from 1970 through 1986. Rates increased every year except 1974–1975 and 1985–1986.

<sup>†</sup>Use of trade names is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

<sup>§</sup>To assess the effects of changes in coding practices from ICDA-8 to ICD-9-CM, NCHS calculated comparability ratios for various diseases, including cerebrovascular diseases. The comparability ratio of a disease entity is defined as the ratio of the number of cases coded to a set of ICD codes under the old coding procedures to the number of cases coded to a set of codes (not necessarily identical) under the new coding procedures, when the coding procedures are applied to the same cases. To obtain its comparability ratios, NCHS recoded data from 1975 using ICD-9-CM procedures. Even the adjusted rates seem to be affected by changes in coding procedures from ICDA-8 to ICD-9-CM and therefore are not used in this report.

**FIGURE 1. Hospital discharge rates per 100,000 persons for cerebrovascular diseases – United States, 1970–1986**



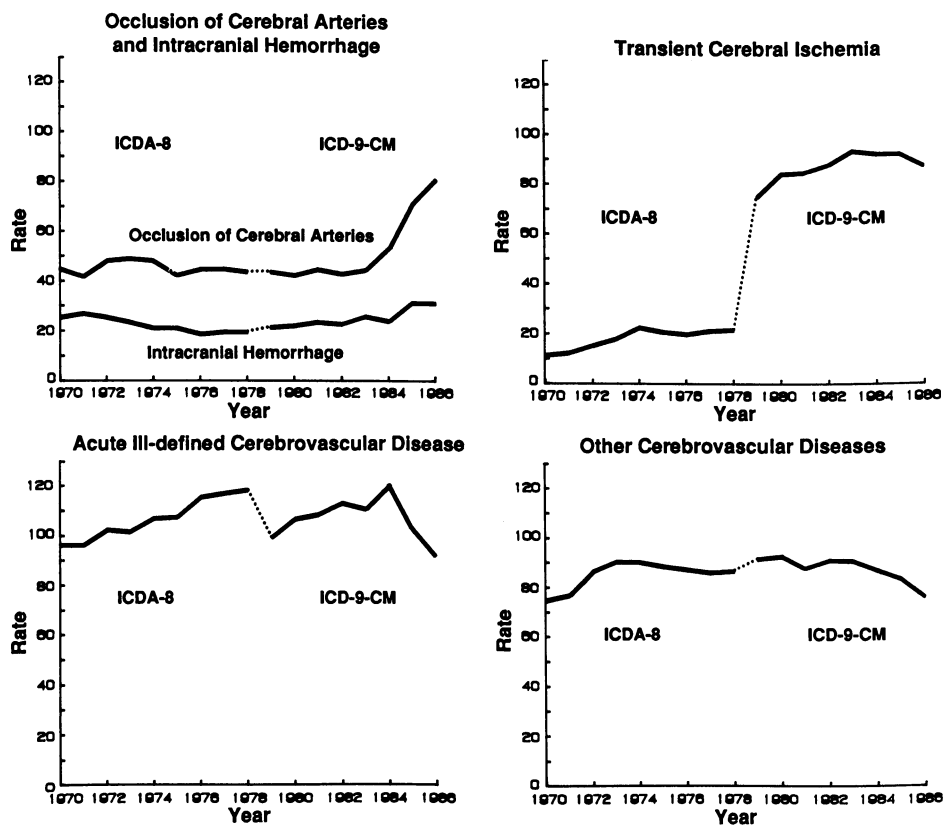
*Cerebrovascular Disease — Continued*

Trends in hospital discharges per 100,000 population varied among the components of cerebrovascular disease. For intracranial hemorrhage, rates decreased from 26 in 1970 to 19 in 1976, then increased to 32 in 1986. For occlusion of cerebral arteries, rates remained relatively constant from 1970 through 1983, then rose from 45 in 1983 to 81 in 1986. For transient cerebral ischemia, rates increased from 12 in 1970 to 22 in 1978 and from 76 in 1979 to 88 in 1986 (with a peak of 94 in 1983). For acute ill-defined cerebrovascular disease, rates climbed from 97 in 1970 to 119 in 1978 and from 99 in 1979 to 121 in 1984; they declined to 104 in 1985 and to 92 in 1986. For other cerebrovascular diseases, hospital discharge rates increased from 75 in 1970 to 87 in 1972, fluctuated between 87 and 93 through 1984, then declined to 76 in 1986.

*Reported by: Office of Surveillance and Analysis, Center for Chronic Disease Prevention and Health Promotion, CDC.*

**Editorial Note:** This report uses data on hospitalizations to identify trends for one important aspect of the health-care burden of cerebrovascular disease. Hospital discharge rates reflect a variety of influences and often do not correspond to trends in incidence or mortality rates (8). Since 1970, stroke mortality in the United States has declined. This change has been attributed in part to declining incidence resulting

**FIGURE 2. Hospital discharge rates per 100,000 persons for components of cerebrovascular disease — United States, 1970–1986**



*Cerebrovascular Disease — Continued*

from improvements in the detection and control of hypertension (9–11). The data in this report showed an increase in cerebrovascular disease hospitalization rates from 1970 through 1984. Additional evidence suggests that an increased detection of milder strokes may have contributed to increasing hospitalization rates (12,13). Declining hospitalization rates after 1984, together with declining mortality and case-fatality rates, may indicate a declining prevalence of disease.

This analysis showed the greatest decline in discharge rates after 1983 in the less specific disease categories (other cerebrovascular disease, acute ill-defined cerebrovascular disease, and transient cerebral ischemia) and the largest increases in discharge rates in the more specific diagnostic categories (intracranial hemorrhage and occlusion of cerebral arteries). Thus, the introduction of diagnostic related groups, which became widely used after 1983, may have stimulated increased use of more specific diagnoses. Increases in the use of computerized tomography and in elective hospitalization for endarterectomy may also have contributed to increased recognition of intracranial hemorrhage and occlusion of cerebral arteries from 1983 through 1986.

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## **School Policies and Programs on Smoking and Health — United States, 1988**

In 1988, the National School Boards Association (NSBA), in collaboration with the American Cancer Society, the American Heart Association, and the American Lung Association, conducted a random sample mail survey of 2000 of the more than 15,000 public school districts in the United States to gather information on school smoking policies and programs (1); 1310 (66%) of the districts responded. A similar study was done in 1986 (2). Topics covered in the survey were districts' policies on tobacco smoking, development of school smoking policies, antismoking education programs in schools, assistance given to districts by voluntary health organizations, and demographics of each school district. Two hundred of the 690 nonrespondents were contacted and questioned by telephone; they were similar to respondents demographically and in their responses. Not all respondents answered all questions.

In 1988, 1239 (95%) of all responding school districts had a written policy or regulation on tobacco smoking in schools; in 1986, 622 (87%) of 714 school districts had a written policy or regulation. All the written policies addressed smoking by students, 1189 (96%) addressed smoking by faculty/staff/administration, and 1140 (92%) addressed smoking by other adults (e.g., parents, school visitors). Of the 71 (5%) responding districts with no written policy, 31 (44%) are considering developing such policies. Of the 1310 districts responding, 226 (17%) totally banned smoking (no smoking allowed by anyone on school premises or at school functions). From 1986 to 1988, the proportion of districts prohibiting adults from smoking in school buildings, on school grounds, and at school-related functions more than doubled. For example, the proportion prohibiting smoking by faculty/staff/administrators in school buildings increased from 11% in 1986 to 289 (24%) of 1188 in 1988.

Of the 1169 districts with written policies, 802 (69%) had enacted these policies within the last 6 years. Health hazards of tobacco use continued to be the reason most respondents (914/1188 [77%]) cited for instituting a nonsmoking policy, followed by belief in adult role models (574/1188 [48%]) and state or local antismoking legislation (525/1188 [44%]). Smoking policies were initiated by school boards (307/1203 [26%]), district administrations (226/1203 [19%]), teachers (156/1203 [13%]), building administration staff (143/1203 [12%]), parents (69/1203 [6%]), community (69/1203 [6%]), students (63/1203 [5%]), and other (48/1203 [4%]).

Most districts (1078/1239 [87%]) reported excellent or good compliance among faculty, and 1062 (86%) of 1239 reported similar compliance among students. Reported compliance was much higher in districts with total smoking bans than in districts with some restrictions.

In 1988, 942 (75%) of 1254 school districts had antismoking educational programs at the elementary school level, 1016 (81%) at the middle school level, and 982 (78%) at the high school level; in 1986, the corresponding proportions were 61% for elementary schools, 64% for middle schools, and 62% for high schools. Voluntary health organizations were involved in providing antismoking education in 74% of the school districts.

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*Smoking and Health – Continued*

**Editorial Note:** Tobacco use by students remains a major public health problem. Approximately 3000 persons—most <21 years of age—begin to smoke each day in the United States (3,4). The findings that 95% of school districts now have a written policy regarding smoking and that this proportion has been increasing are encouraging. Smoking bans in schools accomplish several goals: 1) they discourage students from starting to smoke; 2) they reinforce knowledge of the health hazards of cigarette smoking and exposure to environmental tobacco smoke; and 3) they promote a smoke-free environment as the norm. It is particularly important that smoking policies are now directed at adults as well as students. School policies that restrict smoking have always applied to the students, but from 1986 to 1988, the proportion of districts having smoking restrictions for faculty/staff/administrators and other adults attending school functions increased substantially.

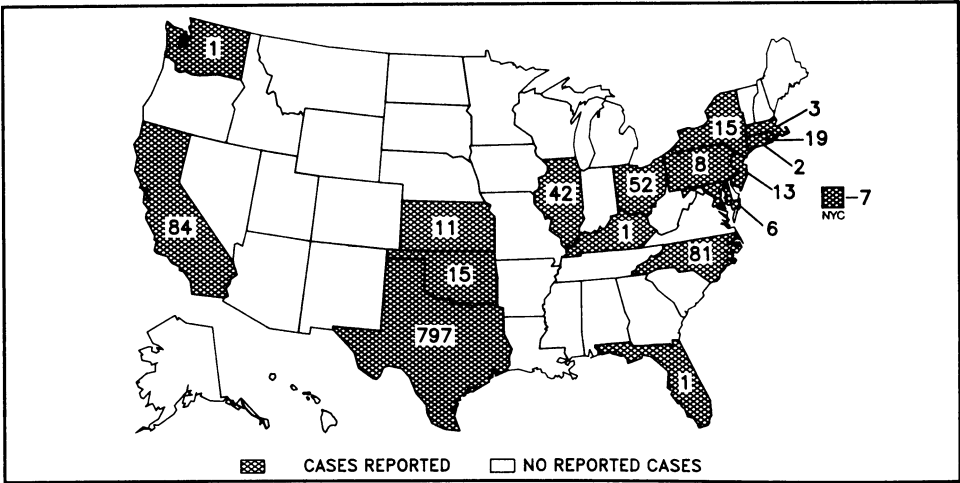
The 1990 health objectives for the nation include as a target that all 50 states enact laws that prohibit smoking in enclosed public places (5). Based on the present survey, a completely smoke-free environment for schools has been achieved in 17% of school districts. In accordance with its goal of eliminating smoking in the public schools, NSBA has published *No Smoking: A Board Member's Guide to Nonsmoking Policies for the Schools* (2), which includes the entire 1986 survey report, outlines implementation steps and guidelines concerning nonsmoking policies, and describes several antismoking school programs across the country.

The increase in antismoking instruction in schools is also encouraging. Studies show that such instruction, as part of a comprehensive school health education curriculum, is effective in preventing initiation of smoking among children and adolescents (6). A National Cancer Institute advisory panel on smoking and school health has developed recommendations for the essential elements of a school-based smoking prevention program (7). These elements include: emphasizing the social and short-term physiologic consequences of tobacco use; training students in refusal skills; involving parents, trained teachers, and peers in smoking-prevention activities; and designing a curriculum that reflects the needs of the community. The public health community has also identified the need to develop cessation programs for children and adolescents addicted to nicotine (4).

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FIGURE I. Reported measles cases – United States, Weeks 8–11, 1989



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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday. The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333; telephone (404) 332-4555.

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